

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/845,322

REMARKS

This amendment, submitted in response to the Office Action dated February 27, 2003, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 1-3 and 12-18 have been rejected under 35 U.S.C. § 103 as being unpatentable over Okino (U.S.P. 4,958,233) in view of Uji-Ie et al. (U.S.P. 4,332,884, hereafter “Uji-Ie”). Claim 5 has been rejected under 35 U.S.C. § 103 as being unpatentable in view of Okino in view of Uji-Ie and further in view of Kobayashi et al. (U.S.P. 4,868,089, hereafter “Kobayashi”). Claim 6 has been rejected under 35 U.S.C. § 103 as being unpatentable over Okino in view of Uji-Ie and further in view of Yamada et al. (U.S.P. 5,264,316, hereafter “Yamada”). Claims 4 and 7-11 have been rejected under 35 U.S.C. § 103 as being unpatentable over Okino in view of Uji-Ie and further in view of Kubo et al. (U.S.P. 6,303,259, hereafter “Kubo”). Applicant submits the following arguments in traversal of the prior art rejections.

Applicant’s invention relates to an image producing apparatus that provides image production while minimizing the generation of waste products. Detailed descriptions of an exemplary embodiment are set forth in the December 3, 2002 Amendment at page 5. Similarly, Kubo is described in the December 3 Amendment at page 5. Applicant refers the Examiner to these descriptions.

Turning to the newly cited art, Okino relates to a recording apparatus that records images to a photosensitive recording medium using analog and digital image recording techniques. Referring to Fig. 1, for the analog recording (Fig. 1, element 200), an illuminating lamp 302 with a reflecting mirror 301 linearly scans an image. A recording material located underneath the

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scanning beam receives the recording light at region 32. For digital recording (Fig. 1, element 300), a light source comprising three semiconductor lasers are used to scan light according to a digital image signal onto the recording medium placed on a recording drum 26. The sheet is provided to the drum after being cut from a roll by cutter 23. Fig. 2 of Okino illustrates the wavelength sensitivities of the photosensitive material. The material is sensitive to visible light, red, green and blue and two infrared bands (in the range of 750 nm to 830 nm) to effect both the analog and digital recording. Col. 5, line 52 to col. 6, line 2. A UV light 124 is used for fixing the image transferred to an image receiving sheet C.

Uji-Ie relates to a composition for a photosensitive medium that is recorded by UV light and fixed using visible light. The disclosed chemical composition of the film provides a high contrast image without deteriorated color sensitivity and which can also form positive and negative images. The disclosure of Uji-Ie suggests photosensitive materials are highly sensitive to recording wavelengths and are fixed by energy of a different wavelength. Col. 1, lines 42-51. In the disclosed embodiments, a photooxidant in combination with a color-generator produces color when the photosensitive medium is exposed to ultraviolet light. A photoreductant reduces a substance upon exposure to visible light to provide fixing of the color in the medium. See claim 1.

Kobayashi relates to a silver-halide containing photosensitive film, which is processed according to known-solution based developing processes. See col. 40.

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The Examiner contends that the primary combination of Okino and Uji-Ie teaches each feature of independent claims 1 and 12. Applicant would submit that the rejection is not supported for the following reasons.

First, as an initial matter, Okino and Uji-Ie may be not properly combined. Okino and Uji-Ie relate to different recording medium that are responsive to different wavelength stimuli. In Okino, both analog and digital recording are contemplated, using visible and infrared wavelengths. Once recorded and developed, a UV fixing light is applied to a receiving sheet containing the image. Significantly, the wavelengths for the different forms of recording and the fixing are non-overlapping. This is due to the wavelength sensitivity of colorants in the image forming media. By contrast Uji-Ie has an opposite light sensitivity for purposes of recording and fixing. UV light is used for recording and visible light is used for fixing. Uji-Ie further emphasizes the wavelength sensitivity for recording purposes. See col. 1, lines 42-51. Therefore, one skilled in the art would not combine the teachings of Okino and Uji-Ie.

Second, the Examiner's proffered reasons for making the combination are not supportable. The Examiner contends that it would be obvious to modify Okino to include the visible wavelength fixing device in order to generate a high contrast image. This is incorrect. The contrast aspect of the image results from the composition of the medium itself, not from the fact that a visible light fixes the image. See Uji-Ie, col. 2, lines 24-37. Significantly, the composition of the photosensitive medium in Uji-Ie responds to recording at the UV wavelengths and is fixed at the visible wavelength due to certain photooxidants and photoreductants in the materials. This would not provide sufficient motivation to include the

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visible light as a fixer in Okino because the nature of the materials in the two references are fundamentally different in their wavelength sensitivities.

As a related matter, Applicant would submit that including a visible wavelength fixing element in Okino would not improve contrast. If anything, the inclusion of the visible fixing element could potentially reduce contrast. In the transfer of certain colorant materials onto the image receiving sheet of Okino, the colorants (which produce color in response to visible light) may produce additional unintended colorants in response to a visible fixing light. This would have the effect of potentially reducing contrast for the desired image or developing colorants where no such color development was intended. Therefore, the Examiner's rationale is not supported for this additional reason. Therefore, claims 1 and 12 and their dependent claims 2-11 and 13-18 are patentable for at least these reasons.

With further regard to claim 17, this claim describes a cutter disposed after the fixing section. The cutter 23 of Okino is disposed prior to the recording section, which is several elements upstream of the fixing element. There is no suggestion of repositioning the cutter in Okino and doing so would require a redesign of the reference in a manner not taught or suggested by the art. Therefore, claim 17 is patentable for this additional reason.

With further regard to claim 18, this claim describes the casing, optical recording section, thermal developing section and optical fixing section are disposed vertically. In Okino, the elements are horizontally arranged, and there is no suggestion of the rearrangement of elements as described in claim 18.

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With further regard to claim 5, the Examiner concedes that Okino and Uji-Ie do not teach the fixing light intensity as described by this claim. The Examiner cites Kobayashi to make up for this deficiency. Applicant would submit that the rejection is not supported for the following reasons.

First, Uji-Ie may not be properly combined with Kobayashi. In particular, Uji-Ie specifically criticizes silver containing photo-sensitive films for requiring developers and fixers in order to obtain the image. Col. 1, lines 20-26. In direct contrast, Kobayashi relates to improvements for a silver-containing film which is processed by immersion in different fluids. See Kobayashi, col. 40. In this connection, Kobayashi contradicts not only Uji-Ie but also contradicts also a fundamental object of the present invention by generating waste products during film developing. Therefore, Kobayashi is not a suitable reference for use against this application.

Second, assuming *arguendo* that the references may be combined, their combination does not teach or suggest each feature of claim 5. Claim 5 describes that the fixing intensity is of a certain magnitude. The Examiner cites col. 201, lines 40-44 to teach this aspect of the claim. However, the cited portion of Kobayashi relates to exposure, or recording, not to the fixing step. Therefore, claim 5 is patentable for this additional reason.

With regard to the rejections of claims 4 and 6-11 over various combinations of Okino, Uji-Ie, Yamada and Kubo, Applicant would submit that Yamada and Kubo do not make up for the fundamental deficiencies of the primary combination as discussed above in connection with claim 1.

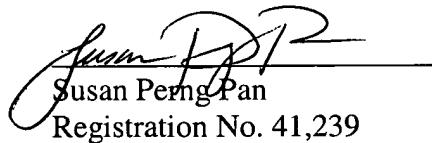
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Applicant has added new claims 19-20 to describe features of the invention more particularly.

In view of the above, Applicant submits that claims 1-20 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Susan Peng Pan
Registration No. 41,239

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE



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PATENT TRADEMARK OFFICE

Date: April 29, 2003

APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) An image-recording apparatus comprising:
a casing section which encases a light and heat sensitive recording material;
an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and
an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing [a] the developed image.

12. (Amended) An image-recording apparatus comprising:
a casing section which encases light and heat sensitive recording material;
an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;
a thermal developing section, downstream [downsteam] of the optical recording section, which develops the latent image by heating; and

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an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing [a] the developed image.

Kindly add the following new claims:

19 (New). The apparatus of claim 1, wherein the optical fixing section irradiates light onto the light and heat sensitive recording material to fix the developed image thereon.

20 (New). The apparatus of claim 12, wherein the optical fixing section irradiates light onto the light and heat sensitive recording material to fix the developed image thereon.